GENERAL NOTES

1) THIS DESIGN PROVIDES MODIFICATIONS TO AND EXTENSION OF THE EXISTING FIRE ALARM SYSTEM FOR BUILDING 64 TO ACCOMMODATE THE 2–STORY BUILD–OUT BETWEEN COLUMN LINES 8 AND 9. THE DESIGN PROVIDES NEW SPOT–TYPE SMOKE DETECTORS (FOR AREA COVERAGE AS NOTED, FOR OPERATION OF SMOKEGUARD ASSEMBLIES AS NOTED, AND FOR OPERATION OF THE ELEVATOR RECALL AS NOTED); A HEAT DETECTOR (FOR ELEVATOR POWER SHUNT TRIP), A WATER FLOW SWITCH (FOR ALARM AND FOR ELEVATOR POWER SHUNT TRIP); A VALVE POSITION SUPERVISORY SWITCH; MANUAL FIRE CALL BOXES; AND AUDIBLE/VISUAL, AND VISUAL NOTIFICATION APPLIANCES. ALL INITIATING DEVICES & NOTIFICATION APPLIANCES SHALL BE COMPATIBLE WITH THE EXISTING NEW SIEMENS FIRE ALARM CONTROL PANEL (FAP). THE DEVICES AND APPLIANCES SHALL BE PROVIDED AND INSTALLED AS INDICATED IN THE DRAWINGS, NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 72, NATIONAL FIRE ALARM CODE, AND THE SYSTEM SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S LISTINGS AND APPROVALS.

2) THESE DRAWINGS ARE DIAGRAMMATIC IN THAT EXACT DEVICE, APPLIANCE, AND EQUIPMENT LOCATIONS, CONDUIT ROUTING, CONDUIT SUPPORT AND CONSTRUCTION DETAILS ARE TO BE DEVELOPED BY THE SUBCONTRACTOR.

3) THE DETAILS SHOWN ARE DIAGRAMMATIC AND REPRESENT FEASIBLE CONNECTIVITY. THE SUBCONTRACTOR MAY MODIFY THE CONNECTIVITY TO SUIT FIELD CONDITIONS PROVIDED THAT THE NOTIFICATION APPLIANCE AND INITIATING CIRCUIT LOADS DO NOT EXCEED THOSE SPECIFIED IN THE LISTINGS AND APPROVALS FOR EACH MANUFACTURER'S PIECE OF EQUIPMENT.

4) THE EXISTING FAP AND CIRCUITS SHALL BE MODIFIED AS NECESSARY TO PROVIDE THE DESIRED FUNCTIONS. THE SUBCONTRACTOR SHALL PROVIDE THE NECESSARY AND APPROPRIATE CONDUCTORS/CABLING BETWEEN THE FAP AND THE NEW DEVICES AND APPLIANCES.

5) ELEVATOR CAPTURE AND RECALL SHALL BE PROVIDED. PROVIDE AND INSTALL THE NECESSARY EQUIPMENT FOR RECALL TO THE DESIGNATED PRIMARY FLOOR (1ST FLOOR) AND TO THE DESIGNATED SECONDARY FLOOR (SECONDARY FLOOR).

6) ALARM SIGNALS (FROM THE HEAT DETECTOR PROVIDED IN ELEVATOR MACHINE ROOM) AND THE WATERFLOW SWITCH (PROVIDED FOR THE SPRINKLER IN THE ELEVATOR MACHINE ROOM) SHALL CAUSE A POWER SHUNT TRIP FOR THE ELEVATOR POWER.

7) ANY FIRE ALARM SIGNAL SHALL CAUSE ALL NOTIFICATION APPLIANCES (EXISTING AND NEW) TO OPERATE. ANY FIRE ALARM SIGNAL SHALL ALSO CAUSE AN ALARM SIGNAL TO BE TRANSMITTED TO THE UNIVERSITY'S RECEIVER VIA THE EXISTING MX–203 TRANSMITTERS.

8) ANY SUPERVISORY OR TROUBLE SIGNAL SHALL CAUSE A LOCAL ALARM AT THE FAP TO OPERATE. ANY SUPERVISORY OR TROUBLE SIGNAL SHALL ALSO CAUSE A SUPERVISORY/TROUBLE SIGNAL TO BE TRANSMITTED TO THE UNIVERSITY'S RECEIVER VIA THE EXISTING MX–203 TRANSMITTERS.

9) ALL NEW CONDUIT SHALL BE ROUTED CONCEALED IN NEW CONSTRUCTION TO THE EXTENT PRACTICAL AND FEASIBLE.

10) THE NEW DUCT–TYPE SMOKE DETECTORS SHALL UTILIZE THE INITIATING ALARM ZONES FROM THE EXISTING FAP. THE NEW 1ST FLOOR DUCT DETECTORS SHALL BE TIED INTO THE EXISTING ALARM CIRCUIT EMANATING FROM THE ZU–35DS MODULE (MOD 13), TERMINATIONS 8 THROUGH 11. THE NEW 2ND FLOOR DUCT DETECTORS SHALL BE TIED INTO THE ALARM CIRCUIT EMANATING FROM THE ZU–35DS MODULE (MOD 13), TERMINALS 2 THROUGH 5.

11) THE NEW FIRE/SMOKE DAMPERS SHALL UTILIZE THE EXISTING 1ST AND 2ND FLOOR DAMPER POWER CIRCUITS.

VOLTAGE DROP CALCULATIONS: NEW NAC

Voltage Drop = (L/1000)(A)(R) Where:
L = Conductor Distance (twice actual distance)
A = Load (amps)
R = Resistance per 1,000 ft #14 (NEC Table 8)

Appliance Type	Appliance Load (amps)	Cumulative Load (amp)	Actual Distance (ft)	Conductor Distance (ft)	Conductor Gauge	Resistance per 1,000 ft	Voltage Drop
B/S	0.116	0.116	40	80	14	3.14	0.0291
B/S	0.116	0.232	45	90	14	3.14	0.0656
B/S	0.116	0.348	130	260	14	3.14	0.2841
	Total Load:	0.348				Total V–Drop	0.3788

23.621 VOLTS REMAINING (within the voltage range of the appliances)
0.348 TOTAL AMPS REQUIRED (within the listed power supply output)

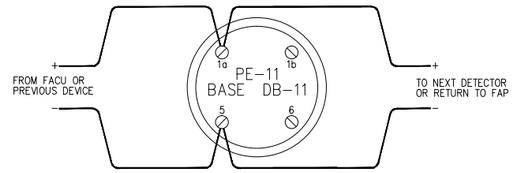
FACU POWER SUPPLY + BATTERY (NEW EQUIPMENT ONLY)

Device	Qty.	Standby Current (amp)	Alarm Current (amp)	Notes
1 ZU–35DS Module	2	0.018	0.275	1 In Alarm
2 ZN–35DU Module	1	0.006	0	None in Alarm
3 Smoke Detector	8	0.008	0	None in Alarm
4 Heat Detector	1	0.001	0.050	1 In Alarm
5 AA–30U Module	1	0.007	0	None in Alarm
6 Relays (SR–35)	3	0	0.135	All in Alarm
7 Notification Appliance Circuit	NA	0	0.348	All in Alarm
8 Relay (SR–32)	1	0	0.045	1 In Alarm
8 Door Holder	2	0.136	0	
Total		0.176	0.853	

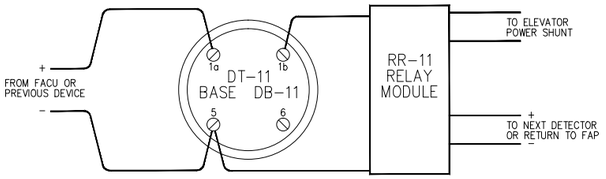
Notification Appliances	Qty.	Current (amp)	Notes
15 cd Bell/Strobe	3	0.348	0.116 A Each
Total (Insert Into #7, Above)		0.348	

Minimum Additional Battery Capacity =
{Add'l Standby Current X Standby Time} + {Add'l Alarm Current X Alarm Time} X 1.2
Minimum Additional Battery Capacity = {0.176 A X 24 Hr} + {0.853 A X 0.083Hr} 1.2
Minimum Additional Battery Capacity = {4.224 AHr} + {0.071 AHr} X 1.2 = 5.154 AHr

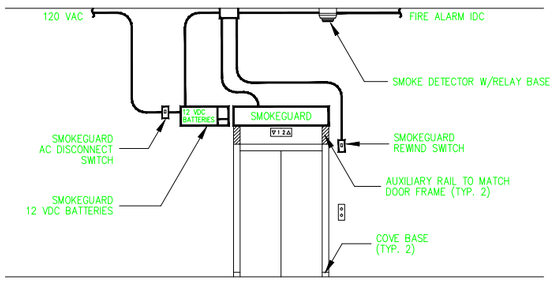
SPECIAL NOTE
The above represents the electrical loads created by the new equipment and devices for the Expansion Project. The loads shown must be added to those for the existing system in order to determine the minimum required battery capacity for the entire system.



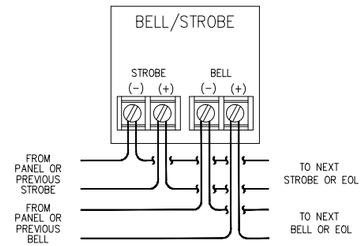
TYPICAL SMOKE DETECTOR DETAIL (5 / FA2.0)
NOT TO SCALE



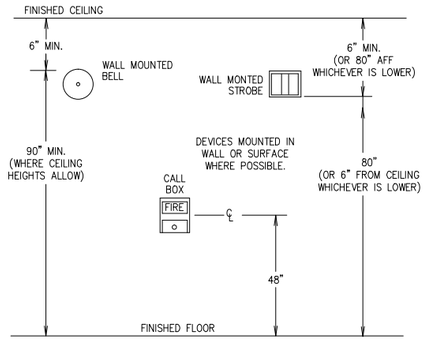
HEAT DETECTOR/RELAY DETAIL (6 / FA2.0)
NOT TO SCALE



SMOKEGUARD ASSEMBLY DETAIL (1 / FA2.0)
NOT TO SCALE



BELL/STROBE DETAIL (2 / FA2.0)
NOT TO SCALE



TYPICAL DEVICE/APPLIANCE DETAIL (3 / FA2.0)
NOT TO SCALE

A				9/30/08	AS BUILT	

REVISION NUMBER | DRAWN BY | CHECKED BY | APPR'D BY | DATE | REMARKS

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PROFESSIONAL SEAL (IF REVISION, APPLIES ONLY TO REVISED WORK)

AS BUILT REVISION A 9/30/2008
ISSUE (PROGRESS, ESTIMATE, BID, CONSTRUCTION, CONFORMED, REVISION, AS–BUILT)

BUILDING 64
LAB AND OFFICE MODIFICATIONS
FIRE ALARM MODIFICATIONS

UNIVERSITY OF CALIFORNIA
LAWRENCE BERKELEY NATIONAL LABORATORY
FACILITIES DIVISION

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APPROVED BY – | –
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